

Lovin' Your Ranchette



NEW MEXICO

WINDBREAKS

Windbreaks or shelterbelts are linear plantings of single or multiple rows of trees or shrubs or sets of linear plantings that are designed to:

- reduce wind erosion
- protect growing plants from wind related damage
- alter the microenvironment to enhance plant growth
- manage snow deposition
- provide shelter for structures, livestock, and recreational areas
- enhance wildlife habitat by providing travel corridors
- provide living noise or visual screens
- provide living barriers against airborne chemical drift
- delineate property and field boundaries
- improve aesthetics
- improve irrigation efficiency
- increase carbon storage in biomass and soils

General Considerations When Planning a Windbreak

The location, layout, and density of the planting should accomplish the purpose and function intended within a 20 year period. The maximum design height (H) for the windbreak or shelterbelt should be the expected height of the tallest row of trees or shrubs at age 20 for the given site.

Species must be suitable and adapted to the soils, climate, and site conditions. Certain species may be adapted to a site but should be given very careful consideration if they are a problem in the area or are considered a problem in the state. Russian olive and salt cedar are very adaptable to most sites but are a serious problem plant in riparian zones and other areas.

Spacing Between the Rows

Spacing between rows except for twin row high density should be as shown below. Plan the row spacing wide enough for maintenance equipment to operate freely between rows. Usually, about 4 feet of additional space is needed along with the planned mature width of the species.

	Low Broadleaf Shrubs	(<25' ht) & Junipers	Broadleaf & Conifer Trees
Shrubs	8-20	12-24	16-30
Low Broadleaf (<25' ht.) & Junipers	12-24	12-24	16-30
Broadleaf * and Conifer Trees	16-30	16-30	16-30

* Any row with species that have an overtopping habit of growth should not be planted within 20 feet of any other species. Species with an overtopping habit include Siberian elm, cottonwoods, honey locust, silver maple, black locust and tree-type willows.

Spacing Within the Row

Single-row field windbreaks and multiple-row living snow fences:

Shrubs	3 to 8 ft.
Low Broadleaf	<25' ht – 6 to 10 ft
Junipers	6 to 10 ft
Conifers	8 to 16 ft
Tall/Medium Broadleaf	10 – 18 ft

Multiple-row field, farmstead and feedlot windbreaks:

Shrubs	3 to 8 ft.
Junipers -- windward row	6 to 10 ft.
Junipers -- leeward rows	6 to 12 ft.
(at the widest spacing, replanting will be essential when mortality occurs due to the large gaps created)	
Low Broadleaf	(<25' ht) -- 8 to 12 ft.
Tall/Medium Broadleaf	10-18 ft.
(use 6 to 8 feet for columnar poplars)	
Pines	10 to 16 ft.
Spruces -- windward row	8 to 12 ft.
Interior rows of multiple row windbreaks	12 to 18 ft.

Site preparation needs to 1) be sufficient for establishment and growth of selected species, 2) not contribute to erosion, and 3) be appropriate for the site. Sites should be essentially free of living plants prior to planting trees and shrubs. Mechanical, manual, or chemical methods may be used for site preparation. Minimum area of site preparation for each tree or shrub needs to be a 3-foot diameter circle.

Only viable, high quality, and adapted planting stock or seed should be used. Preferred seedling stock is a 1:1 shoot/root ratio. This ratio should not exceed 2:1. Seedlings should not be less than ¼ inch in caliper at 1 inch above the root collar. This ratio is critical for successful establishment in a desert environment. Larger container plants need to be very high quality.

During all stages of handling and storage, keep tops dry and free of mold and roots moist and cool. Destroy stock that has been allowed to dry, to heat up in storage (e.g., within a bale or delivery carton), or that has developed mold or other pests.

The planting needs to be done at a time and manner to insure survival and growth of selected species. Roots of bareroot stock should be kept moist during planting operations

by placing in water-soil (mud) slurry, peat moss, superabsorbent (e.g. polyacrylamide) slurry, or other equivalent material. Stock must not be planted when the soil is frozen or dry. Stock needs to be planted in a vertical position with the root collars approximately ½-inch below the soil surface. The planting trench or hole must be deep and wide enough to permit roots to spread out and down without J-rooting or L-rooting. After planting, soil around each plant needs to be packed firmly to eliminate air pockets.

Bareroot and container plantings should be done in the spring after the frost is out of the ground, and before the seedlings have started to break bud and local trees and shrubs have leafed out. High quality container stock can be planted in the fall if there is adequate ground moisture, supplemental water, and the planting will have a minimum of six weeks for root development prior to frost.

The planting must be protected from adverse impacts such as livestock damage, rodents, rabbits, insects, disease, wildlife, and fire. Isolation strips for wildfire control should be at least eight feet wide and twenty feet from the edge of the windbreak species. The area between the plants and the isolation strip needs to be mowed or maintained to prevent excessive growth of grass and weeds.

Avoid planting trees or shrubs within 15 feet of structures or any above or below ground utilities. For planting adjacent to any above-ground utility or facilities, position trees or shrubs so that crowns at maturity are at least 15 feet from the nearest line or structure. If space is limited, species with a mature height less than that of the facility or utility lines may be used.

State and local regulations or ordinances will be followed in locating plantings adjacent to roads or on species and placement. Avoid creating blind corners at road intersections. An ordinance example is the Albuquerque pollen ordinance.

On the windward side of a road in areas of heavy blowing snow accumulation, tree rows should not be planted closer than 150 feet from the centerline of the road to avoid piling snow on the road. Plantings made to the south or east side of roads or highways need to have their nearest row no closer than 100 feet to the road centerline to avoid ice buildup from winter shading and snow drifting.

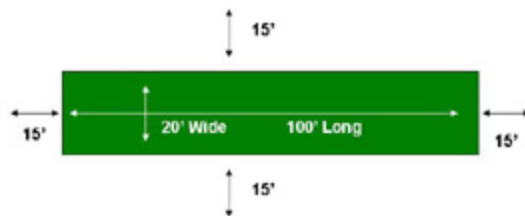
Moisture conservation or supplemental watering needs to be provided for plant establishment and growth. A variety of mulches can be used such as rock, fabricated mulches or organic mulch material like wood chips. Caution must be exercised when using organic mulches like wood chips spread on or mixed into the soil since they will utilize existing nitrogen in the soil to break down the material, taking nutrients away from the plants.

When fabricated mulches are used for water collection/conservation, the material should be woven black polypropylene with a minimum 5-year guarantee against UV deterioration. The material must allow water to go through it but eliminate most

vegetation from growing through it. Minimum area covered by fabric mulch should be six feet by six feet. Mulches should accomplish three purposes: 1) reduce competing vegetation, 2) increase available water for plants, and 3) promote plant growth. Supplemental watering can be by hand watering, flood irrigation, or drip. Thorough watering at less frequent intervals will promote desirable root development.

If conventional tillage methods are to be used for controlling competing vegetation, the area within six feet of young plants should be kept clean tilled. No soil disturbance should occur more than four inches below the surface to protect roots. As the trees grow, tillage should be maintained to the edge of the drip-line or within the expected root development zone.

To determine the acreage encompassed by a windbreak, calculate the area (length times width) with length being the length of the tree or shrub rows plus 15 feet at each end. Width is the distance between each row plus 15 feet on each side of the windbreak. Single row windbreaks would have a width of 30 feet. A double row windbreak with 20 feet between rows would have a width of 50 feet. For optimal carbon storage, select plants that are adapted to the site to assure strong health and vigor and plant the full stocking rate for the site.



$$20' + 15' + 15' = 50' \text{ Width} \quad 100' + 15' + 15' = 130' \text{ Long}$$

$$50' \text{ Wide} \times 130' \text{ Long} = 6500 \text{ sq.ft.}$$

$$6500. \text{ ft.} / 43560 \text{ sq. ft. per ac.} = .15 \text{ ac.}$$

Additional Consideration When Reducing Wind Erosion and Protecting Growing Plants

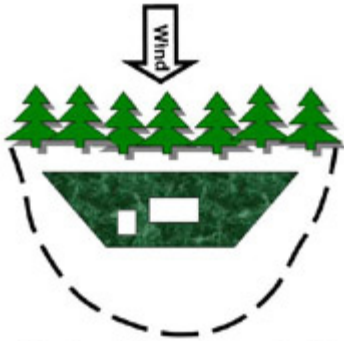
The windbreak should be oriented as close to perpendicular to the troublesome wind as possible. This can vary depending on the time of year protection is being planned. The distance sheltered by the barrier should be considered to be 10 times the design height (H) on the leeward side and two times the design height (H) on the windward side. Some crop and soil blowing protection is achieved at 15 times H.

For wind erosion control, temporary measures may be installed to supplement the windbreak until it is fully functional.

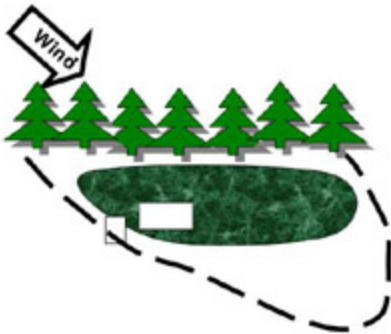
On slopes greater than 6 percent, plant windbreaks on the contour, consistent with any other contour practices in the area to be protected.



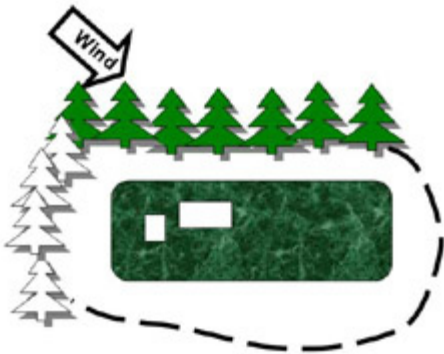
Additional Considerations When Managing Snow Deposition



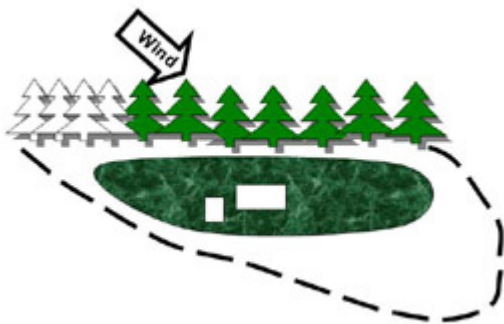
Adequate protection and no snow deposition problems for a one-leg windbreak with a single wind direction.



If the wind shifts inadequate protection and snow drifting potential occurs on one side.



Making a two-leg windbreak can solve the problem.



Extending the one-leg windbreak is an option.

The windbreak needs to be oriented as close to perpendicular to the snow-bearing wind as possible. Where property lines allow, windbreak lengths will extend 150 feet beyond each side of the area being protected to keep snowdrifts caused by end effects from extending into the area being protected. Living snow fences for keeping and storing snow off roads need to have the windward row located at least 200 feet from the centerline of the road being protected. Twin-row high-density designs may be used. Windbreaks must be located so that snow deposition will not pose a health or safety problem or obstruct human, livestock, or vehicular traffic.

Additional Considerations When Providing Shelter For Structures, Livestock, and Recreation Areas

The planting needs to be oriented as close to perpendicular to the troublesome wind as possible. Where prevailing winds come from more than one direction, a windbreak may have multiple legs.

Drainage of snowmelt from the windbreak must not flow across a livestock area. Drainage of livestock waste from a livestock area must not flow into the windbreak.

Providing or Enhancing Wildlife Habitat or Travel Corridors

Plant species selection should benefit targeted wildlife species.

To improve the wildlife value of conservation tree and shrub plantings, two or more rows of conifers, shrubs, or a combination of these are recommended on the leeward side. Increasing the number of rows and diversity of plant species increases the variety of wildlife species that may utilize the site.



Producers should be made fully aware of the full range of wildlife that may be attracted to a tree and shrub planting. Songbirds and game birds may be the preferred species, but other wildlife such as skunks, snakes and mice may also utilize this area. As trees mature they can serve as perches and nesting sites for raptors. They may also serve to attract crows or flocks of blackbirds and sparrows that may have an adverse impact on adjacent grain fields. To enhance pheasant habitat, rows of shrubs planted to create a 0.1 acre or larger thicket 100 feet leeward of tree rows helps provide protection during winter blizzards. To create a thicket, between row spacing should be six feet.

Additional Considerations for Visual Screens

Visual screens should be located as close to the observer as possible with a density, height and width to sufficiently block the view. Evergreen trees are most effective where year-round screening is desired. A single row of trees may be sufficient for this type planting.

Additional Considerations for Noise Screens

Noise screens should be at least 65 percent dense during all times of the year, as tall as, and as close to the noise source as practicable.

The length of the screen should be about twice as long as the distance from the noise source to the receiver. Dense shrubs next to traffic lanes, or other noise sources, backed by rows of tall trees provide effective noise reduction. For maximum effect, use evergreen trees and shrubs for year around control. For high-speed traffic noise, the barrier shall not be less than 65 feet wide. For moderate speed traffic noise, the barrier shall not be less than 20 feet wide. Species selected will be tolerant to noxious emissions, sand, gravel depositions, or salt spray from traffic areas.

Additional Considerations for Aesthetics

Use species that are evergreen or those species that have such features as showy flowers, brilliant fall foliage, or persistent colorful fruits.

Additional Considerations for Improving Irrigation Efficiency

For sprinkler irrigation systems, the windbreak need to be as tall as the sprinkler heads. Trees and shrubs selected to be planted must not interfere with the system.

SOM SUMMARY ISSUES

Spacing between windbreaks and rows of windbreaks may be adjusted, within limits of the considerations above, to accommodate widths of equipment. Allow four feet next to each row, the width of the equipment and planned mature width of the species.

Selection of plants for windbreaks should favor species or varieties tolerant to herbicides used in the area. Plants that may be alternate hosts to undesirable pests should be avoided. As an example, golden currant should not be planted close to southwestern white pine since it is an alternate host of white pine blister rust. All plantings should compliment natural features. Species that

have more aesthetic values should be included. Tree or shrub rows should be oriented on or near the contour where water erosion is a concern. Where water erosion and/or runoff from melting snow is a hazard, it should be controlled by supporting practices.

Wildlife should be considered when selecting tree or shrub species. Species diversity, including use of native species, should be considered to avoid loss of function due to species-specific pests. Consideration should be given to adverse off site effects. Plants established in cropping systems should have root systems that do not affect crop growth and/or spread from root sprouts.

EFFICIENT IRRIGATION SYSTEMS

Plant Needs for Water

Water is a critical component of photosynthesis, the process by which plants manufacture their own food from carbon dioxide and water in the presence of light. Water is one of the many factors that can limit plant growth. Other important factors include nutrients, temperature, and amount and duration of light.

Plants adapted to dry conditions (xeric) have developed numerous mechanisms for reducing water loss, including narrow leaves, hairy leaves, and thick fleshy stems and leaves. Pines and junipers are also well adapted to survive extended periods of dry conditions which they encounter each winter when the frozen soil prevents the uptake of water.

Choosing Plants for Low Water Use

Indigenous plants (xeric) – plants that occur naturally in the local environment – will likely need less supplemental moisture most years than non-native species. These species have evolved under the local conditions and usually have well-developed mechanisms for surviving extremes in the weather.

Irrigation Systems

Irrigation system design is required to ensure that the needs of the plants selected will be met during the young stages of growth and expanded to meet the needs of the fully grown windbreak. A large cottonwood can use up to 200 gallons of water per day, while an Arizona cypress may do fine on a gallon or two a day.

Trickle irrigation and drip irrigation systems help reduce water use and meet the need of plants. With these methods, very small amounts of water are supplied to the base of the plants. Since the water is applied directly to the soil, rather than onto the plant, evaporation from leave surfaces is reduced. The water is also placed where it will do the most good, rather than sprayed over the entire area.

An efficient irrigation system can be easy and fun to install. Numerous products are readily available. The simplest consists of a soaker hose that is laid out around the plants and connected

to an outdoor spigot. No installation is required. A better system is a drip or trickle irrigation system.

Drip or Trickle Irrigation

The basic elements of a drip or trickle system consists of the main (solid tubing) and laterals (solid tubing with emitters added. The main is the part of the system that connects to your water supply. The major components of this should include a pressure regulator, a filter, an anti-siphon valve, and an automatic timer. While this may sound complicated, it is not. Installation of these components will create a better operating system.

Considerations for the head

- Many drip systems are designed to be used with low water pressure, therefore, a pressure regulator should be installed.
- Because of the small size of the opening in the emitters, they can easily become clogged by sediment in the water. A filter should be installed to keep openers operating freely.
- Consider installing a back flow preventer. This is a valve that prevents the accidental backflow of water in the system getting into the water line. Considering the minor cost, it is probably a wise investment for anyone considering a system.
- A timing device can be added to automatically turn the system on and off. This can be as simple as a battery operated attachment or a more permanent timer that is wired into your electrical system.

Plastic tubing is used to get the water from the source to the windbreak. This comes in many sizes. A variety of fittings are available to go around corners and to connect pieces.

Plastic tubing considerations

- Check with the supplier for the maximum length of tubing that can be run in any one direction.
- Consider what you intend to water with the drip system. Not all plants have the same water requirements, and soil conditions in various part of your place may vary. Trees, because of their large size and deep root systems, will probably require less frequent by longer waterings.

Emitters deliver the small amounts of water to the plants. They can let water drip out very slowly. The size of the emitter will influence the amount of water delivered. Drippers vary in the amount of water delivered per hour. Some deliver as little as one-half gallon per hour while other deliver up to 10 gallons per hour. Some emitters are adjustable to deliver different rates of water.

While these systems need more planning, in most cases no special tools or skills are needed. Plastic pipe is punched with an inexpensive tube punch that assures the proper

hole size. Emitters snap into the hole. No gluing or soldering is required. Because the holes are small, they can be easily plugged if you put one in the wrong place. Some systems come with pre-assembled emitters at regular intervals. Drip systems require periodic maintenance. You will also need to check emitters to make sure they are working properly as they can become clogged. New Mexico well and surface water may carry high levels of dissolved minerals - so check at least yearly.

Once you have thought about your watering needs, discuss your ideas with a supplier. Most trickle irrigation suppliers will help you design a system to best meet your needs.

OPERATION AND MAINTENANCE

Replacement of dead trees or shrubs should be continued until the barrier is functional. Single row windbreaks require a minimum of 90% survival to be functional. Multiple row windbreaks require a minimum of 75% survival to be functional. Where two adjoining trees in a row die, at least one needs to be replaced to avoid gaps in functionality. Supplemental water needs to be supplied for the expected life of the trees or shrubs. Supplemental water should be provided for a minimum of five years for development and growth. Where fabricated mulches are used to collect/ conserve moisture, they need to be maintained for a five-year minimum establishment period. Drip irrigation systems must be maintained to avoid loss of plants. Dormant plants should be watered at least monthly if the ground is not frozen and adequate soil moisture is not present.

Thin or prune the barrier to maintain its function. Inspect trees and shrubs periodically and protect from adverse impacts including insects, diseases or competing vegetation. The trees or shrubs must also be protected from fire and damage from livestock and wildlife. Periodic applications of nutrients may be needed to maintain plant vigor. Nutrients should not be added to any nursery stock the first year of planting. Any nutrients to be added must follow recommendations based on soil test, and species. Most native plants will not need any additional nutrients. Over application can be harmful to plant growth and survival.

Root pruning may be used to control roots that are invading crops or other areas. Generally pruning at the drip-line will restrict roots and not affect the health of the tree. Planning should be adequate to not require any root pruning prior to maturity of the species. Columnar trees will have major roots outside the drip-line and root pruning can cause major tree damage. Extreme caution should be practiced with root pruning (because of sprouting) of species such as cottonwood and Russian olive. If it is not known whether pruning will encourage sprouting, do a small test area on one end of the windbreak. Sprouts should not be controlled with chemicals as those chemicals will be transported through the root system to the parent plant. Once root pruning is started, bi-annual pruning will be necessary to maintain the intent.

REFERENCES

USDA-NRCS-NM, 1982. Tree and Shrub Planting Handbook for Arizona and New Mexico Editor: Terry Wildermuth and Bob Bruce et.al. USDA-NRCS-UT, 1993. Tree and Shrub Planting Handbook for Utah and Nevada. Prepared by: David Schen et.al.
USDA-NRCS-NHQ National Forestry Manual Windbreak Technology 1986 Edited by: J.R. Brandle, D.L. Hintz, J.W. Sturrock et.al.

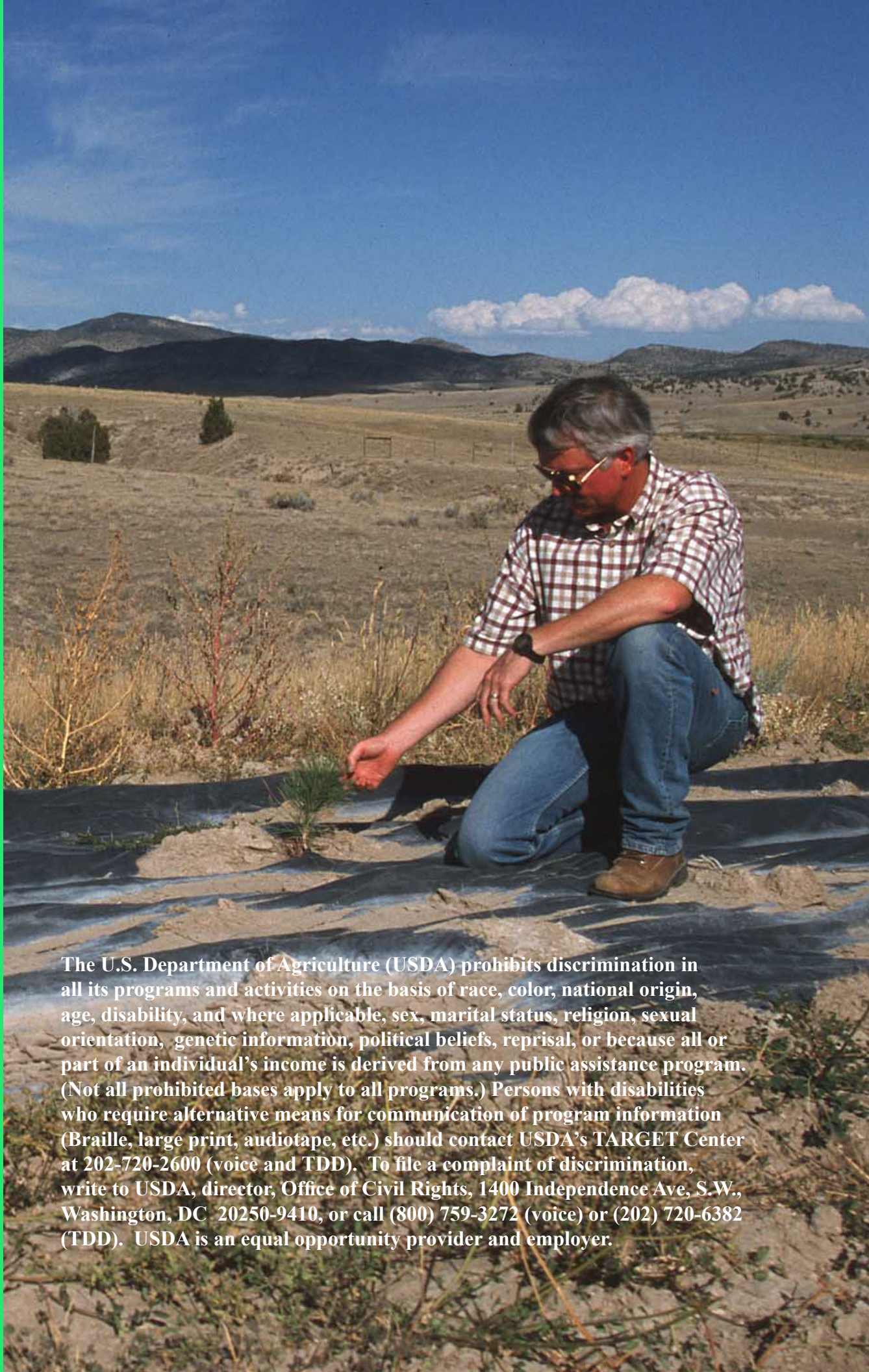
APPENDIX

(1998 New Mexico Forestry Division Seedling List)

	MATURE HEIGHT	GROWTH RATE	LONGEVITY	WATER REQUIREMENTS	ALKALI TOLERANCE	ELEVATION RANGE
WOODS ROSE	6'	Mod	Mod	Mod	Mod	5000-9000'
Rosa woodsii Native to New Mexico and is popular due to showy pink flowers and attraction by birds. Hardy in slightly alkaline soils. Pinnately compound leaf. Good for erosion control, wildlife and windbreaks.						
GREEN ASH	60'	Fast	Long	Mod	Mod	1000-7000'
Fraxinus pennsylvanica A long-lived tree which does well in dry, sterile soils once established. It has moderate to rapid growth with supplemental water. Recommended uses are windbreaks and energy conservation plantings.						
NATIVE PLUM	10'	Fast	Mod	Mod	Low-Mod	3000-7000'
Prunus americana A thicket forming shrub adapted to a wide range of soils and requires supplemental watering on dry sites until established. It produces a small, edible plum which is a good wildlife attractant. Recommended uses are for windbreaks, wildlife plantings and erosion control.						
SKUNKBUSH SUMAC	8'	Mod	Long	Low	Mod	3500-8000'
Rhus trilobata This is an attractive, winter hardy native shrub. Clusters of small, yellow flowers bloom in late May and produce a small red fruit. This shrub is also called three-leaf sumac or squawbush. Recommended uses are windbreaks, wildlife plantings and erosion control.						
NEW MEXICO FORESTIERA	8-10'	Mod	Mod-Long	Low-Mod	Mod	3000-7000'
Forestiera neomexicana Also called NM olive or privet, this native shrub has a broad range in New Mexico. It forms a dense thicket or small tree. The small, yellow flowers on the female plants produce a small purple berry. Recommended planting uses are windbreaks, erosion control and wildlife plantings.						
BLACK LOCUST	50-70'	Fast	Mod	Low-Mod	Mod	3500-7500'
Robinia pseudoacacia An introduced tree which does well on poor soils with supplemental irrigation. The white or pink flowers are in clusters 4-5" long. The recommended planting use is windbreaks.						
NANKING CHERRY	10'	Mod	Mod	Low	Low	3000-8500'
Prunus tomentosa A spreading shrub with rose-type leaves. It is very cold hardy and flowers in late April. It produces an edible fruit and attracts wildlife. Recommended planting uses are windbreaks and wildlife plantings.						
GOLDEN CURRENT	6'	Mod	Long	Low-Mod	Low-Mod	3000-9000'
Ribes aureum A native, rounded shrub with bright green leaves and yellow blossoms in spring. It produces an edible fruit which can be eaten raw, dried or as preserves. Recommended planting uses are windbreaks, revegetation, erosion control and wildlife plantings.						
CHOKECHERRY	6-25'	Mod	Mod	Mod-High	Low	4500-9000'
Prunus virginiana A native shrub or small tree which forms dense barriers. Valuable for wildlife and streamside erosion control. It prefers deep and sandy loam soils. Recommended planting uses include windbreaks, riparian rehabilitation and wildlife plantings.						
HACKBERRY	40'	Mod	Mod	Low-Mod	Mod	1000-7500'
Celtis occidentalis A hardy, drought tolerant tree adapted to the hot, dry climate of New Mexico. This spreading tree produces fruit which are popular with birds. Recommended planting uses are windbreaks and wildlife plantings.						
NOREASTER COTTONWOOD	70'	Fast	Mod	High	Low	1000-7000'
Populus deltoides x nigra A fast growing tree, developing a narrow pyramidal crown which becomes broad and open. Male variety does not produce cotton. Recommended planting uses are windbreaks and erosion control.						
LILAC	12'	Fast	Mod	Mod	Mod	4500-8000'
Syringa vulgaris This violet flowered shrub grows across a wide variety of soils. Due to its growth habit, it is suitable in single or multi-row windbreaks and has high quality cover for wildlife. Recommended planting uses are windbreaks and wildlife plantings.						
NARROWLEAF COTTONWOOD	70'	Fast	Long	Mod-High	Mod	5000-10,000'
Populus angustifolia A native tree with willow-like leaves, common along streams in the mountains of New Mexico. It is the only winter hardy cottonwood in New Mexico. Recommended planting uses include windbreaks, wildlife plantings, erosion control and riparian area rehabilitation.						
VELVET ASH	25-50'	Mod	Long	Mod	Mod	2000-7000'
Fraxinus velutina Also called Arizona ash. A native tree widely distributed through canyon bottoms in SW New Mexico. It is well adapted to the desert areas of NM and has moderate wildlife value for birds. Recommended planting uses are riparian reclamation, windbreaks, erosion control and wildlife plantings.						

	MATURE HEIGHT	GROWTH RATE	LONGEVITY	WATER REQUIREMENTS	ALKALI TOLERANCE	ELEVATION RANGE
AFGHANISTAN PINE <i>Pinus eldarica</i> A medium-sized tree native to southwest Asia. It forms a dense conical crown. An extensive root system gives this tree the ability to withstand drought. Plantings are best in southern New Mexico. Recommended planting uses are windbreaks, Christmas trees.	60'	Fast	Long	Mod	Mod	0-4500'
DESERTWILLOW <i>Chilopsis linearis</i> A native shrub or small tree found in washes and along roadsides. It has showy, white-lavendar flowers. Recommended planting uses are windbreaks, screens and dry wash reclamation.	25'	Fast	Mod	Mod	Mod	0-5000'
FOUR-WING SALTBUSH <i>Atriplex canescens</i> This native shrub grows across a wide variety of soils inc. saline soils. This is a highly prized browse plant by livestock and wildlife. Recommended planting uses are windbreaks, erosion control and reclamation of severely disturbed sites.	4'	Mod	Long	Low	High	0-7000'
RUBBER RABBITBRUSH (CHAMISA) <i>Chrysothamnus nauseosus</i> A native shrub which grows well in disturbed sites and in alkaline soils. It produces a yellow flower in the fall. Recommended planting uses are windbreaks, erosion control and reclamation of severely disturbed sites.	4-6'	Mod	Mod-Long	Low	Mod-High	1000-7500'
MEXICAN BUCKEYE <i>Ungnadia speciosa</i> A native shrub or small tree which grows across a wide variety of soils if well drained. It is drought tolerant once established. Clusters of small pink flowers appear in the spring. Recommended planting uses are windbreaks and energy plantings.	15'	Fast	Mod	Low	High	1000-5000'
ARIZONA CYPRESS <i>Cupressus arizonica</i> A native tree with a conical crown. It survives well in shallow, alkaline soils. Its shape when young has suggested to some to be used for Christmas trees. Recommended planting uses are windbreaks, energy conservation plantings and Christmas trees.	60'	Fast	Long	Low	Mod-High	1000-5500'
EASTERN REDCEDAR <i>Juniperus virginiana</i> Native to the eastern and plains states, it forms a dense, narrowly pyramidal crown. It grows across a wide variety of soils, inc. those with a high water table. Recommended planting uses are windbreaks, living snow fences and energy conservation plantings.	40'	Mod	Long	Low-Mod	Mod	3000-7000'
APACHE PLUME <i>Fallugia paradoxa</i> A native, it occurs along the sides of dry washes and hillsides. The roselike white flowers are showy in the early summer with feathery clusters of plume-like fruit in the fall and winter. Recommended planting uses are windbreaks, erosion control and wildlife plantings.	4-6'	Mod	Mod-Long	Low	Mod-High	5000-8000'
WINTERFAT <i>Ceratoides lanata</i> A hardy, native half-shrub with a range throughout New Mexico. It is heavily used as a browse plant. The seed heads in the fall give the plant a pleasing silvery appearance. Recommended planting uses are erosion control, range improvement, wildlife and windbreaks.	3-4'	Mod	Long	Low	Mod-High	2000-7500'
PIÑON PINE <i>Pinus edulis</i> The New Mexico State tree, it is an aromatic pine which grows across a wide variety of soils and does well under cultivation. It is popular for the edible nuts it produces. Recommended planting uses are windbreaks, reforestation and Christmas trees.	40'	Slow	Long	Low	Mod	3500-9000'
ROCKY MOUNTAIN JUNIPER <i>Juniperus scopulorum</i> A hardy, native tree growing across a wide variety of soils. It is the fastest growing of Southwestern junipers and can be found along mountain streams and dry, rocky slopes. Recommended planting uses are windbreaks, reforestation and erosion control.	40'	Mod	Long	Low	Mod	3500-9000'
SCOTS PINE (SCOTCH PINE) <i>Pinus sylvestris</i> A native of Europe, the irregular pyramidal crown develops into a broad crown with age. It is widely planted for Christmas trees in parts of the U.S. Recommended planting uses are windbreaks, Christmas trees and energy conservation plantings.	50'	Mod-Fast	Long	Mod	Low-Mod	3000-7500'
AUSTRIAN PINE <i>Pinus nigra</i> A native to Europe, but has proved to establish and grow well in the Southwest. Recommended planting uses are windbreaks and energy conservation plantings.	60'	Mod-Fast	Long	Mod	Low-Mod	3500-7500'
GAMBEL OAK <i>Quercus gambelii</i> A native tree or large shrub recognized by the deeply lobed leaves which are larger than those of other Southwestern oaks. This is the only common tree oak in northern New Mexico. Recommended planting uses are reclamation, wood products, erosion control and wildlife.	20-70'	Mod	Long	Mod	Mod	5000-8500'

	MATURE HEIGHT	GROWTH RATE	LONGEVITY	WATER REQUIREMENTS	ALKALI TOLERANCE	ELEVATION RANGE
NEW MEXICO LOCUST	15-25'	Fast	Long	Mod	Mod	4500-8500'
Robinia neomexicana A native tree with showy clusters of purplish flowers in the spring. This plant is especially useful for erosion control due to its rapid growth and thicket forming tendencies. Recommended planting uses are windbreaks, reclamation, wildlife and erosion control.						
PONDEROSA PINE	80'	Mod	Long	Mod	Low-Mod	4500-9000'
Pinus ponderosa A large, native tree, it is the primary commercial tree species in New Mexico. Its pyramidal shape when young becomes conical with age. It does best on well drained soils. Recommended planting uses are reforestation and windbreaks.						
DOUGLAS-FIR	80'+	Mod	Long	High	Low	4500-10,000'
Pseudotsuga menziesii A large, native tree with a dense, conical crown. It has moderate resistance to drought above 6500'. Recommended planting uses are reforestation and Christmas trees.						
SOUTHWESTERN WHITE PINE	80'	Mod	Long	Mod	Low	4500-10,000'
Pinus strobiformis A large native tree which grows well in a forest environment. It's blue-green foliage makes it a formal-looking tree when young. It has edible seeds, similar though smaller than those of piñon. Recommended planting uses are reforestation, Christmas trees and windbreaks.						
BLUE SPRUCE	80'	Slow	Long	High	Low	5000-10,000'
Picea pungens A native with a conical shape. The color of the foliage is green to blue. It requires supplemental water and may require shade protection when young. Recommended planting uses are reforestation, Christmas trees and windbreaks.						
WHITE FIR	80'	Slow	Low	Mod-High	Low	5000-10,000'
Abies concolor A native tree, it is widely used as a Christmas tree in New Mexico. It has a conical shape which becomes irregular with age. Recommended planting uses are reforestation and Christmas trees.						
ASPEN	60-80'	Fast	Mod	Mod-High	Low	6500-10,000'
Populus tremuloides A native tree widely distributed above 7500' as a pioneer species after disturbance. Domestic livestock, elk and deer browse the foliage when within reach. Recommended planting uses are reforestation, wildlife plantings and reclamation of disturbed sites above 6500'.						



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